

*An Examination of the Report of the Commissioners to Enquire
into the Mortality of the Army.*

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IN estimating the value of Statistics in the present day, we must consider them in relation to the metaphysical tendencies now prevalent. Metaphysics have always been the bane of science, and their invasion on the domain of Positive Philosophy is the dreariest sign of the times. As an Edinburgh Reviewer has observed, where men formerly expended their energy on scholastic quibbles they now compile statistics, evincing a mental disease, which may be termed the colliquative diarrhœa of the intellect, indicating a strong appetite and a weak digestion. Were a true method observed in their culture, this denunciation would fall harmless, and statistics would rise to a dignity hitherto unknown.

A method there is, as ^{certain} ~~simple~~ as it is comprehensive, capable of working out the difficult problem of vital statistics as exactly as our imperfect powers of observation will allow,—the Inductive method—the text you will say for all statistical enquirers, and if you change the word *induction*, in its common acceptation, for inductive method, you are right. The one is a simple inference, the other a tedious and complicated succession of inferences. The one may arrive at truth by accident, the other must in time eradicate error. The metaphysical aptitudes of our nation have robbed Bacon of his true place,—his philosophy is taught in none of our English universities, and scientific enquiries have

been starved. When writers like Mill and Macaulay treat him with scorn, what chance has he with the less sagacious? Who could recognise Bacon's method in the ludicrous picture of a man stuffing himself with mince pies, suffering from nightmare, and then avoiding them and sleeping soundly, to wake in the morning, and arrive at the conclusion by the inductive method that the mince pies had caused his disturbance? This is a simple inference. The true method, separated from its metaphysical jargon, from scholastic terms and modes of thought, is a very different thing from this, and will be equal to all the requirements of scientific investigation.

You must see that you may foresee. You must generalise slowly from particular things to those but one step more general, from those to others of still greater extent, and so on to such as are universal.

Assume nothing. Form no theories. Interrogate, but do not anticipate nature. Observe closely and rigorously; verify your observations. Multiply your observations and verifications. Thus you arrive at facts. Next examine their relation and succession, remembering always the law which Comte has defined, that in proportion to the complexity of the phenomena is the increase of the number of relations in which they may be surveyed and made the subject of experiments. Thus you arrive at laws. At each step the process of verification to be rigorous.

The classification, observance of the similitudes, and succession of these laws into one general system, constitute the highest aims of Positive Philosophy. It matters not whether the last process is termed deductive or inductive. It really is and can be nothing more than an advanced stage of the inductive method.

To illustrate this,—an observation is made that a man without obvious disease, dies in a chamber filled with carbonic acid gas. To ascertain the relation between the gas and the death, we proceed according to the method. An examination detects no disease of internal parts, known to produce death, except sundry

congestions of blood. Further enquiries indicate the same coincidences. A careful investigation points to no known causes of death also present. We verify our observation. We find by experimenting on animals that death invariably attends the breathing of the gas for a certain time, and that an examination of the internal organs detects the same disorder of the interior economy in all, including the subjects of the first observations. We may safely now register it as a fact that breathing carbonic acid destroys life, and this we call a law.

We make other observations, and find that atmospheric air in a confined space will only support life for a certain time. We test the air thus breathed, and find that at the period when death occurred the quantity of oxygen was reduced to twelve or fourteen per cent. and the quantity of carbonic acid gas notably increased. We extend our observations, and find the same results invariably taking place. We verify in exactly the same way as in the previous instances. Further, we place animals in an atmosphere of nitrogen, and find death invariably occurring. We place them in an exhausted receiver, and the same result occurring, we pursue our observations, and find that an atmosphere of oxygen will support life for a certain time, and we evolve another law that oxygen is necessary to support life.

We make other observations, and find that a candle ceases to burn in an atmosphere of carbonic acid, or of nitrogen, or in an atmosphere having less than fourteen per cent. of oxygen. Another law is induced. We now examine the relation and succession of these various laws, and arrive at a more general law, a practical and valuable conclusion, that an atmosphere incapable of supporting combustion is fatal to animal life.

Is this the process that is pursued by statistical enquirers? Very rarely. It is indeed often mere enumeration, without the assistance of the logical faculty trained to the work. In vital statistics, owing to the complexity of the phenomena, two and two do not necessarily make four. The value of the unit has first to be discovered, or we are groping in the dark. That the

inductive method is not pursued, in many instances, must be painfully familiar to the members of this Society. A law is assumed from scanty and unverified observations, and all subsequent observations are made to bend to it. The enquirer does not *see* that he may *foresee*, but under a metaphysical nightmare, he *theorises* that he may foresee. He is like the poet, who according to Plautus, when he sets about composing, seeks what is nowhere, and yet finds it. He spoils in applying the arithmetical rule of position, to assume a false quantity to arrive at the true, and this accomplished, to discard the false ; he assumes a false quantity or an unproved quantity and maintains its truth. He travels in a dream land, pleasing his fancy with the mirage of the desert rising in its beauty and order, soon to disappear before the reality of a desolate sand-waste. "Men see clearly," says Bacon, "like owls in the night of their own notions, but in experience, as in the daylight, they wink and are but half-sighted." It constantly occurs that facts are accepted on authority,—the respectability of the narrator leading to the assumption that a rigorous verification is unnecessary. We forget that sagacity is even more necessary than honesty in observation. * "The Frenchman assured his friend that the earth did turn round the sun, and offered his parole d'honneur as a guarantee ; but in the delicate and difficult question of science, paroles d'honneur have a quite inappreciable weight."

We shall find in studying the inductive method that we must altogether reject the futile search for final causes. In the language of Auguste Comte, whose book on Positive Philosophy is a matchless offering to science, and one which will take its true place when the world has forgotten his unfortunate attempt to construct a theology, during years of clouded reason,—"en un mot, la revolution fondamentale qui caractérise la virilité de notre intelligence consiste essentiellement à substituer partout, à l'inaccessible détermination des causes proprement dites, la simple recherche des lois,

* Lewis.

c'est-à-dire, des relations constantes qui existent entre les phénomènes observés. Qu'il, s'agisse des moindres ou des plus sublimes effets, de choc et de pesanteur comme de pensée et de moralité, nous n'y pouvons vraiment connaître que les diverses liaisons mutuelles propres à leur accomplissement, sans jamais pénétrer le mystère de leur production.

Non-seulement nos recherches positives doivent essentiellement de réduire, en tous genres, à l'appréciation systématique de ce qui est, en renonçant à en découvrir la première origine et la destination finale ; mais il importe, en outre, de sentir que cette étude de phénomènes, au lieu de pouvoir devenir aucunement absolue doit toujours rester relative à notre organisation et à notre situation."

If the statistician will make himself familiar with the spirit of Bacon's method, if he will work by its rules, modifying them occasionally to suit his purpose, his course, though at first difficult, must at last become pleasant and profitable. Let him forget the abuse which modern writers have heaped on the inductive method, resting satisfied that it has prepared the way for two such works as Mill's *Logic*, and Comte's *Positive Philosophy*. It is to be deplored that Bacon's comparatively small acquaintance with physical science prevented his rendering his rules perfect, by bringing them freely to the test of application. It was owing to deficient scientific qualifications that Mr. Neison worked out from statistics the idea that imperfect ventilation does not produce disease in the army ; and it was owing to a profound knowledge of science that Dr. Guy worked out from the same tables a law exactly opposite. The two works, however, which I have mentioned above, supply the deficiency in Bacon's method, and will arm the student for every emergency. Let him not however be misled by a name, into studying Dr. Whewell's *Novum Organon Renovatum*. It is not Bacon at all, but Immanuel Kant that we recognise, with all his assumptions and constant *Petitio Principii*. The reader must contrast the method indicated above with that adopted by the military statisticians, and honoured with the imprimatur of

the Royal Commissioners, and to which I shall draw his attention when I have considered the general bearing of the evidence.

Half a century ago, Lord Melville, from his place in the House of Lords, enunciated the axiom, *that the worst men make the best soldiers*. True to the maxim, each successive government did its best to brutalise the unfortunate slave whose necessities had driven him to sell himself body and soul for life, to be shot at, educated in crime, and perhaps flogged to death when he had learned his lesson too well; to receive in return a promise of £3. 10s. 0d. bounty money, of which he was robbed as soon as he joined his regiment, under the pretence of paying for his kit; a hovel to lodge in, two meals a day, such as they were, a tumbler of spirits, the drinking of which was certified by a commissioned officer, his clothes, and threepence a day;—and when his brute strength, for which alone he was valued, was reduced below the exigencies of the service, dismissed upon a pension of perhaps a shilling a day. And what were the relations of officer and man. Contempt on one side and hatred on the other, ending possibly in a catastrophe too shocking to dwell on,—the story of officers dying on the field of battle from no bullet of the enemy.

The irresistible force of public opinion has changed much of this, but unfortunately left still much to be done; and now, with the continent in a flame, with the alarming spectacle of treacherous despots forming close alliances, and curiously scanning our coasts, the British soldier was never of more value to his country than at present. Our military authorities are perfectly, nay, alarmingly aware of this fact, and only require the assistance of public opinion to enable them to execute necessary reforms. A large mass of information bearing upon the subject is collected together in the “Blue Book,” entitled, “A Report of the Commissioners appointed to enquire into the Sanitary Condition of the Army.” The commissioners are able, earnest, and humane men, and if the enquiry has not been compre-

hensive enough, if omissions have been made from partial information, and if the statistical tables are imperfect and unreliable, there can have been, with so devoted a friend to the soldier as the Hon. Stanley Herbert in the chair, no wish to mislead the public or to screen abuses. On the contrary, they expose them freely and suggest many radical changes in the lodging, food, dress, and occupations of our soldiers. The primary question at issue is the cause of army mortality. Till this is settled, no reforms can be complete or satisfactory. The object of the following pages is to assist this enquiry and in a humble degree to promote that publicity which the commissioners desire, and without which, they state in reference to the mortuary returns of the army, "this subject important as it is, may again fall into oblivion and neglect, and the evils which we have described continue unnoticed and unremedied." With constant changes in the Executive, the only hope of efficient army reform rests in the determination of the public loudly and continuously expressed. It should be remembered that it is every man's question, involving as it does our national honor and our public expenditure.

Notwithstanding the appearance of a somewhat delicate reserve in noticing the complaints of some of the witnesses, the Commissioners have acted with boldness and vigour in recommending a large and generous reform in the Medical Department of the Army, leaving little to be desired, and opening out a path of honourable ambition to men of the greatest promise. Here public opinion has been anticipated, but not so in reference to the soldier; his position is not yet thoroughly understood, and the advice tendered to the war authorities shows yet an imperfect comprehension of his wants and rights.

On the great health problem, the effect of over-crowding in barracks, the evidence before the Commission exhibited a conflict of opinion. It is unfortunate that the public prints have favoured the unscientific views of Mr. Neison, in opposition to the overwhelming evidence of Miss Nightingale and others,

as to the effect of deficient ventilation in generating scrofula and fever. In dealing with soldier's quarters in barracks and hospitals, the Commissioners in their recommendations, are liberal in every thing except space. Moreover it is not clear whether the improvements are to affect barracks already in existence, or merely applies to future buildings. It cannot be conceded that 600 cubic feet for men in barracks, and 1200 cubic feet for patients in hospitals, is sufficient. It is true that under the most favorable circumstances, no material injury may accrue to the inmates, but can any reliance be placed on the constant occurrence of these favorable circumstances? Certainly not. 1000 cubic feet for barracks and 2000 for hospitals would be more in accordance with our sanitary science. A large expenditure must no doubt be incurred in carrying out this change, and fear of this has produced this compromise; and unless the public dings its demands perseveringly and emphatically into the ears of the authorities, and freely opens its purse, justice will not be done to the soldier, and British barracks may still remain the nurseries of scrofula. No want of information can be pleaded on this point, but on other important points, such as the habits of the soldier, the influence of syphilis, of drunkenness, of punishments, and the absence of moral training, in producing disease, there is a singular deficiency.

The statistics form the least satisfactory part of the book. The returns from which they were compiled were avowedly imperfect, and it is not surprising to find the results untrustworthy. It is painful to condemn the work of men like Sir A. Tulloch and Dr. Balfour, whose practical labours have perhaps contributed more to the amelioration of the miseries of the service than those of any other men.

To understand the value of the reform conceded to the Army Medical Department, we must study the evidence, page after page of which assures us that the position of the medical officers in the army has hitherto been anomalous, his pay has been insufficient, his regimental rank unascertained, and

his promotion entirely a matter of chance. In sanitary matters (obviously his department) his theories have been systematically ignored, and his advice when given, often contemptuously rejected. He has had the mortification of seeing his attempts to benefit the sick soldier rendered nugatory by the crotchet of some colonel, or by the whims of some overbearing or ignorant purveyor. Talleyrand's famous advice, "point de zele, s'il vous plait," has been especially his guide for action. It is well known that the great Duke systematically snubbed the doctors in the Peninsula, and lost no opportunity of administering severe reprimands, and yet no one can doubt that he acted from a sense of duty, and for what he considered the good of the service. His views have influenced the treatment of the army doctor ever since, and the consequence has been, that promising young men have been recommended not to enter the army. There have always been more vacancies than applications, and in periods of emergency they have had to fill up the ranks with half-educated students. Sir B. Brodie states that he always dissuaded young surgeons of high attainments from entering the service, assuring them that the rewards of civil practice would prove much greater. The imperfectly educated medical officer has had to learn his profession at the expense of his patients, and as soon as he has acquired the requisite knowledge to treat disease successfully, promotion has removed him from executive duties, to perform others technically called administrative duties; which in civil life are performed by the butler and the housekeeper. Whilst engaged in the treatment of the sick, his work has been constantly interfered with to a great extent by the quantity of writing he has had to do, and which could be performed as well by the Hospital Serjeant. Surgical knowledge alone has been demanded of him, notwithstanding the fact that nineteen-twentieths of the cases he has to treat are purely medical.

Mr. Ferguson states that he considers the surgeon to be the most important officer in the army, but he is often treated as the least important. In one case the colonel of the 82nd insisted

on bringing home all his combatant officers and leaving out two of the medical staff, notwithstanding the strong recommendation of the medical department that all the medical officers should be with their regiments, to meet any epidemic emergency that might arise. The inspector remonstrated and the brigadier ordered the medical officers to join. Subsequently, the colonel complained of the interference with his arrangements, the brigadier gave way, and the doctors were left behind. Several of the witnesses complained that an aged surgeon might find himself commanded by a boy ensign. The regimental surgeon has been constantly overinspected, and not unfrequently reprimanded before his patients, or a rude order given in their hearing to change the treatment.

The present Director General, one of the most skilful administrative officers that our army has ever possessed, states that when he was with his regiment at Quebec, a slow form of fever prevailed amongst the troops, and he was obliged to give wine freely. It appeared that in some hospitals the daily expense of patients was sixpence, in others, tenpence. The latter was the sum in his, and he was informed that any medical officer, whose patients cost tenpence per diem, either neglected his duty or did not understand it. He requested an enquiry, believing that the health of the men would be perilled by such outrageous interference, and was informed that the Duke of Wellington objected to any such enquiry.

In other cases the medical officers paid for extras when they were objected to, because they knew that if any enquiry took place, whatever the result might be, they would be noted as troublesome fellows. Routine and red tape have been the curse of the department, and no doubt the interests of the patients have been systematically subordinated to the saving of trouble.

Mr. Rowdon, a hospital surgeon in London, selected for his known skill and acquirements as one of the civil surgeons to supplement the army medical corps in the East, found that the vigour and knowledge he imported, were offensive to the principal medical officer. On this functionary leaving the

station, the two deputy inspectors shewed their high estimation of his devotion and zeal in unmistakeable language. They thanked him,—saying that they would rather part with any other officer than him, if they could select. On his arrival in this country he waited upon the late Director General, who declined to express any satisfaction, sneered at the self-estimation of the profession, and told him he had been reported as troublesome, but declined to give any particulars.

The late Director General, Sir A. Smith, has undoubtedly had to undergo a storm of undeserved obloquy during the most creditable part of his career. His advice to the military secretary, on the breaking out of the Russian war, shewed wisdom and forethought; it was treated with contempt, and the army perished.

He has made an honourable retreat, with a well deserved decoration, from his stormy tenure of office, but his retirement is unregretted by the army surgeons, who considered that his arrangements of promotion were arbitrary and undefined. Great allowances must be made for a difficult position; but it must also be said that in peace times, with leisure and opportunities, he originated few reforms; allowed the continuance of the old blundering nomenclature in medical returns, and took no steps by publishing a roster of service to convince his subordinates that any just principle dictated promotions. In the matter of confidential reports against surgeons his evidence is contradictory and uncandid; and though the commissioners absolve him from blame, it is clear that regimental surgeons under his auspices, avoided responsibility and were constantly afraid of zeal in the service attracting attention, and entailing on them the reputation of being *troublesome fellows*.

Miss Nightingale speaks with indignant surprise on this head. "The fear of being called a *troublesome fellow* which, to my positive knowledge, deterred medical officers from making repeated requisitions for articles which they knew to be necessary for the men, or for repairs, because they feared that such conduct would injure their prospects. This will be denied,

but it is true for all that." Such has been the blighting influence of the system, that out of between seven and eight hundred army surgeons in the East, she says there were but two or three capable of organising a system for 1,000 to 2,500 sick.

Even in the treatment of disease, the fear of being considered troublesome will lead to the same results as want of skill; in illustration of which I may mention that some years ago I handed over a military hospital to a young assistant surgeon, who was alarmed at the liberal scale of diets and extras ordered for the men. He reduced them all for fear of enquiry, and on my resuming the duties at the end of a week, I found that obvious injury had accrued from the reduction of nourishing food.

What is now the condition of the private soldier? Doubtless much better than it was a few years ago. He is treated more like a Christian man than a slave, he is somewhat better fed, no longer forced to drink spirits; receives good conduct pay; is provided with a regimental school, for a penny a month has access to a good library, and is no longer exposed to unlimited corporal punishment—fifty lashes being the maximum he can receive. Instead of these improvements increasing his cost to the country, it is now £40. 3s. 6d. per annum against £42. 15s. 11d. the sum expended on his maintenance twenty years ago. We have reduced his mortality to a great extent, but how far we have fallen short of our duty, we may gather from the following statements culled from the evidence.

BARRACKS.—The Barracks in India have cost £16,000,000, and have been built in violation of known sanitary principles, and an immense and unnecessary mortality has been the result. Since the year 1837, more attention has been paid to health principles, and a large reduction of the death rate has ensued, and yet we have to read such figures as these:—

	Presidency of Bengal.	Presidency of Madras.	Presidency of Bombay.
Annual Mortality of Troops per 1,000	69·5	38·4	58·7

The explanation of this will be found in the fact that every precaution is taken to exclude air, and that the regulation space for each man in tropical climates is—

480 to 600 Cubic feet	Barracks.
700 to 900 ditto	Hospitals.

In temperate climates Miss Nightingale asserts that 1,500 cubic feet ought to be the allowance per man. It is a known fact that the sepoy mortality is not greater than that of the class from which he is taken, indeed it is stated to be less, and the explanation is, that the sepoy does not sleep in barracks, but is hutted during the night.

What principle has determined the construction of barracks in the United Kingdom?—

Colonel Jebb says,—“In building barracks, sanitary requirements have been overlooked. They have been constructed under the Engineer Department, and in no instance has the opinion of medical officers been taken.”

Mr. Taylor says, that “Military hospitals are generally inferior to the Civil, and that there is a less chance of the recovery of patients. Even at Chatham the most trivial repairs and improvements are impracticable. Application has to be made here there and everywhere.”

Colonel Chapman denies the utility of consulting a surgeon in the choice of site or in the general arrangements. On this Dr. Balfour remarks, that “Engineers have no practical experience of barracks, and if an Engineer officer would occasionally go into a soldier’s quarters at night, he would find the necessity of consulting the army Medical Department.”

Miss Nightingale says that “bad as the hospitals in the East were, our home hospitals at Brompton, Portsmouth and Chatham, are quite as wanting in sanitary works.”

The Regulation space per man in temperate climates is 400 to 500 cubic feet. The Commissioners say that even this limited space is often practically unattained, and even where ventilators exist, they are frequently “stopped up by the men themselves, who look to the exclusion of external air in the absence of fuel,

as the best means of securing warmth. The result is that the soldier sleeps in a fetid and unwholesome atmosphere; the habitual breathing of which, though producing for the most part no direct immediate effects, probably sows the seeds of that pulmonary disease which is so fatal to the British army."

Sergeant Brown says he found the atmosphere in a very thick and nasty state on going into the men's rooms in a morning, and he could not bear till he had ordered the windows to be opened to make a draught. The air was very offensive from the men's breath, and the urine tubs in the room. No chamber vessels are found for the men, but instead of them one or more wooden tubs are placed in the middle of the room. These, to my knowledge, are often not cleaned, merely emptied, and as the Commissioners say, "The stench proceeding from a wooden vessel, saturated with urine, is most prejudicial to the health." It will hardly be credited that in many barracks the unfortunate soldiers have to wash in these disgusting vessels.

In these poisoned rooms the men have to spend many hours in the day and take their meals. To add to the horrors of this scene, it must be remembered that soldier's wives often have to occupy the same room as the men. In a return lately presented to Parliament, it is stated that out of 251 stations, at 20 only is there a separate accommodation for married soldiers. To show how badly the money for building barracks is spent, only one-fourth goes to the accommodation of the soldiers; three-fourths being expended on officer's quarters, offices, canteen, library, guard room, punishment cells, parade ground, &c. No water-closet is provided for the soldier, and he has, if necessary, to leave his heated room at night, slightly clad, to cross an exposed place. One of the witnesses states, that the soldier never knows a healthy home till he is in prison.

We will now compare the regulation with the actual space allotted to soldiers:—

	Maximum.		Minimum.
Sheffield	331
Chatham	350	219
Brompton	450	243

	Maximum.	Minimum.
Dover Castle	412	147
Pendenms Castle	329	..
Drogheda	262	..
Mallow	228	..
LONDON—		
Wellington	390	..
St. George's	390	..
Buckingham Palace	429	..
Regent's Park	499	..
Portman-street—Guards	331	..
St. John's Wood	370	..
Hyde Park—Cavalry	572	..
Ditto Infantry	376	..
Kensington—Cavalry	363	..
Ditto Infantry	285	..
Tower	397	..
QUARTERS OF FOOT GUARDS—		
Windsor	332	..
Chichester	355	..
Winchester	467	344

These must not be taken as averages, but as specimens of the worst. I give a table of averages :—

[DR. GUY.]

BARRACKS—		Cubic Feet.
Average of London		400
„ England		447
Cavalry 1-5th more space than Infantry.		
HOSPITALS—		
Average of London—Civil		1472
„ Provincial—Civil		1075
„ Military, No. 46		665

I particularly draw your attention to the London, Windsor, Chichester and Winchester Barracks, as bearing upon the interesting question of the mortality of the Foot Guards. The washing of the floors in winter weather is a most injurious plan. The barrack-room weekly supply of coals, issued on Saturday, is exhausted in about five days, and the floor remains wet for many hours.

A table is given of the cubical space per man in various guard-rooms, but it is of no value, as the number of prisoners is not given. Every man entering the barracks after tattoo is

confined in the guard-room till the next morning, At Ashton Barracks there is a small guard-room which occasionally contains 36 men, allowing an average of 107 cubic feet per man. A certain allowance of coal is made daily, and in the early part of the night a roaring fire is kept up, and the atmosphere is stifling, towards morning the supply is exhausted, and through the constant opening of the door the temperature falls rapidly. The men lie in their great coats, often wet, and severe catarrhal affections result.

The Ashton cells are supposed to be warmed and ventilated on a perfect principle, but as the warming apparatus is occasionally out of order and in severe weather the supply of coals is insufficient, little can be said in its favor. The ventilating arrangement is altogether a failure, and when I have occasionally gone to see a prisoner early in the morning the atmosphere has been perfectly sickening.

At Chatham some years ago the barracks were full, some fresh troops arrived, and the men had to be crowded to accommodate them. Three men occupied the space allotted to two, and in one fortnight they buried eleven men who died from scarlet fever. The weather was hot, and probably less than the minimum space, 219 cubic feet, was allotted. I had this fact from Sergeant Charlesworth, who was quartered there at the time. The authorities took the hint, relieved the crowding, and the epidemic ceased.

Such then is the lodging of the soldier. What must be the physical evils produced by it? Dr. Guy in his evidence on the state of large towns says that his experience has taught him that consumption is not a natural disease produced by our climate, but chiefly due to the poisonous atmosphere of our workshops, and of the dwellings of our poor. Sir James Clark regards the breathing of a deteriorated atmosphere as one of the most powerful causes of scrofula and consumption; and Dr. Southwood Smith declares his conviction that pure air is more necessary than food in staving off consumption. What does Mr. Roberton say about the atmosphere of the Cornish Mines?

He shows that the expectation of life amongst the miserable workmen, whose atmosphere is perhaps the worst known, is *twenty-eight* years. In the face of these facts, and in contradiction to evidence that is irresistible, Mr. Neison insists that bad ventilation does not materially damage the soldier. His ignorance of medical science has led him into his mistakes ; and as long as military people take the opinion of engineers and actuaries on subjects which they cannot understand, blunder they must. Mr. Neison's remedy for the soldiers' wrongs is more exercise,—because the labourer is hard worked and lives long ! It is to be hoped that these fallacies will be disregarded, and that these momentous questions have now hold of the public mind. It is known, for the last quarter of a century science has been lessening the mortality of the artisan. The exertions of the executive and of Parliament have been pushed to the verge of endurance ; private benevolence has instituted sanitary associations in aid of this noble purpose, and yet hitherto, with some few exceptions, the barracks, destined to lodge the men of whom we profess to be so proud, have been such as humanity has refused to assign to the felon.

Under the influence of the same temerity which led Mr. Neison into his ventilation theories, he discusses the subject of drunkenness in the army. He denies its existence, though proved by unassailable evidence, and opposing a theory to a fact, says that drunkenness is registered in our mortuary returns by the presence of diseases of the nervous and digestive systems, and because he does not find these prevailing in the army, hesitates not to assert the sobriety of the men.

Drunkenness in the army can never be stated in a tabulated form, its amount must be ascertained by general observation. A week or two ago, Private Usher of the 90th regiment, gave a lecture at Devonport, in which he stated that drunkenness was the great curse of the British army.

The intemperate civilians drink to excess all day, and each day, and often for many days together. The inspected life of a soldier forbids a prolonged debauch, and if he has sense

enough to know that he is drunk and to stay out all night, perhaps sleeping in a field and thereby producing severe disease, he escapes heavy punishment for drunkenness, and the loss of a penny a day of his good conduct pay, which results from the reports of this crime. If he can manage to get to his bed without attracting the attention of the guard he escapes punishment altogether. And so it is possible for the soldier to be really intemperate without much remark.

The Editor of the *Medical Gazette* relates that a medical officer of the Foot Guards informed him just before the breaking out of the Crimean war that he had received an order to attend the early firing party in Hyde Park, because so many of the men fainted. On enquiring the cause of this astounding fact, he was told that drink was at the bottom of it. The men came into their sleeping rooms half drunk, and turned out early in the morning without breakfast, or any desire for it, and just when the reaction of depression was setting in, and this fainting was the consequence.

What steps are taken by military authorities to diminish drunkenness, beyond the withdrawal of the spirit ration, the institution of regimental libraries, and the punishment of the soldiers when guilty of the crime? Much more may be done by the institution of more intimate personal relaxation between the chaplain and the men. Doubtless we must not expect that our army recruited from the refuse of the population, selected from men who often enlist because their want of character bars other sources of employment to them will exhibit as a whole, under any training, the austere morality of Cromwell's "ironsides" or Havelock's "saints," but the experience of those triumphs of benevolence—Ragged Schools—shews how much may be effected amongst the pariahs of society.

The Commissioners dispose of the important subject of Syphilis in a few lines, yet from my own observation and the reports of others, I must say that to no one cause do I attribute so much mortality as to syphilis.

Medical Times.—"In 1848 the number of troops in the United

Kingdom was 62,000, and amongst them the cases of venereal disease were reckoned at 16,700. Are we to suppose that a disease which affects the health of one-fourth of the whole army, and compels the subject of it to remain, on an average, fifteen days in hospital, can fail to be indirectly a highly predisposing cause to the invasion of other diseases? And this especially, when we recollect that Syphilis is a disease which too often leaves its mark permanently indented on the constitution. There is also evidently another injurious consequence which arises from these diseases. If one-fourth of the army is prostrated for fifteen days in the year by venereal disease, the other three-fourths have so much extra duty to do."

Dr. Bryson, R.N. says it is a fact, which deserves to be more generally known, that Syphilitic diseases are more prevalent in this country, especially in garrison and seaport towns, than they are in any other part of the known world. Amongst the Foot Guards 250 per 1000 annually suffer from these diseases; latterly ten per cent. of the whole force have been in hospital at one time; and take the whole army on home service, and you will find five per cent. constantly disabled from the same cause.

Dr. Coombe, of the Royal Artillery, states as the result of twelve years' experience, that Syphilis is more rife in the army than it was, and that the secondary or constitutional manifestations of it follow more rapidly, and more frequently. This is my own experience, and I may add that long after they are dismissed as cured from the hospital you can read in their sallow faces the tale of their disaster. When these men are in hospital you can imagine the evil consequences of an insufficient supply of nourishing food and stimulants. They are often necessary in very large quantities, and yet, a young or timid medical officer hitherto has not dared to prescribe them for fear of a reprimand.

A painful subject connected with the health of the army is the treatment of the unfortunate beings always found swarming in garrison towns. The state, either from indifference, motives of economy, or from a fear of undue limitation of the liberty of

the subject, takes no notice of their existence, and leaves unchecked the terrible evils connected with their traffic. The institution of a Medical Police, and the establishment of Reformatories and Lock Hospitals, are certainly subjects for philanthropic and economic speculation. Facilities afforded by Government to private benevolence would best accomplish the two latter objects, but the first, the institution of a medical police, established if you will, on the Continental system, must of course be the work of state or of municipal action. In the meantime, the moral training of the soldier should be carefully attended to. At present his religious training costs the country one-fifth less than the cost of martial law in punishing his crimes, although his pay is taken whilst under punishment in reduction of the amount. One good work has been done in the establishment of regimental libraries which are open to soldiers on the payment of a penny a month. The books almost invariably chosen are novels, but they are ~~not~~ of the best sort.

Dr. Guy, in his able pamphlet, in common with most of the commission witnesses, is disposed to attribute to overcrowding in barracks the greater part of the excessive death rate in the army, but that he does not entirely depend upon this cause, may be gathered from the following useful table :—

CAUSES OF DISEASE.	Agricultural Labourers.	Sailors.	Police.	Fire Brigade.	Aristocracy.	Tailors, Compositors, Clerks.	Draymen, Hired Vehicles.	Soldiers, Infantry.
Overcrowding or want of Air	++	++	++	++
Deficient Exercise	++	++
Defective or Monotonous Diet.....	++	++	++
Inadequate Clothing.....	++	++	++
Night Work	++	++	++
Exposure to Weather	+	++	++	++	++
Intemperance	++	++
Luxury	++
Dissipation.....	++	++
Insufficient Occupation.....	++	++

Thus you see that with the exception of luxury each cause of disease affects the soldier. I will particularise in one column the chief individual sources of army disease. In comparing them with the report it will be seen how little weight the Commissioners give to many of them.

In Barracks—

- Bad ventilation, and occasionally draughts from broken windows.
- Damp floors.
- Night exposure in going to latrines, and bad drains.
- Poisonous effluvia from urine tubs and latrines.
- Monotonous and often bad diet.—Meat contracted for at 5d. per lb.

In Guard Room—

- Bad ventilation and crowding.
- Wet clothes.
- Great changes of temperature.
- Exposure when hot to night air.
- Length of sentry duty.

Under punishment in Military Hospitals and Barrack Cells, where he encounters—

- Bad ventilation.
- Low diet.
- Shot drill.
- Pack drill.
- Deprivation of bed.

In Hospital—

- Low diet.
- Straw mattresses, collecting poisonous exhalations.
- Draughts from broken windows.
- Out of door exposure in going to latrines.

On Parade Ground—

- Insufficient clothing.
- Exposure to weather.
- Wearing wet clothes.

Generally—

- Drunkenness.
- Exposure all night to avoid punishment for the above crime.
- Syphilis.
- Want of moral training.
- Ennui.

The rationale of military punishments is to make the work as wearisome as possible to the soldier, and the shot drill is certainly calculated to effect this. It is continued for an hour, and repeated at intervals during the day, and consists of piling and

unpiling shot, or lifting a 32 lb. shot from the ground and depositing it in a stone cup at a short distance, walking to the next and lifting and depositing that and so on. The drill is continued for an hour at once, and when not skilfully done as an old soldier would manage it, with the heels well together and the back properly bent, occasions great strain on the abdominal muscles and groin, producing buboes and rupture. This repeated four times a day, with other active work, is accomplished on a low diet, the cost of which is not to exceed $5\frac{1}{2}$ d. per diem, and consists of bread and milk or partly this and partly potatoes. In the barrack cells the prisoner loses his bed two nights out of three. In the larger prisons where the men go in for longer periods they are divided into three classes, a prisoner enters as a third class man, is deprived of his bed for the first seven days, has two gills of milk, 17 ounces of meal, a pint of coffee and half a pound of bread. Shot drill three hours a day besides other drill and work, in all not more than ten hours. After the lapse of seven days he is allowed a bed every third night. After a term of good behaviour the prisoner may be put into the second class where the drill is easier, the shot being only 16lb. and a bed allowed every other night. When he is promoted to the first class he has a bed every night, and after 56 days' servitude he is allowed ten ounces of meat once a week on Sundays, and two pounds of potatoes.

Misconduct in prison subjects the soldier to a reduction of his already insufficient diet, and for 72 hours he may be put on bread and water. As a result of this discipline Colonel Jebb says that the health of the men is preserved, but that they lose weight. Every regimental officer knows that a man who has undergone six months' imprisonment in a military gaol comes out a broken down man, incapable for some time of active duty and often the subject of dysentery or some other severe form of bowel affection. Why did not the Commissioners follow the man to his regiment and learn from his regimental surgeon the direful effects on body and mind of the inhuman punishment he has undergone?

The moral training of the military prisoner is as deficient as his discipline is inhuman. At no period of a soldier's life is he so open to good impressions as when in solitary confinement; and does he then profit by the exercises of religion under a judicious clergyman? It is enjoined in the Queen's Regulations. Is it carried out? I fear not, or at any rate so rarely as to be altogether exceptional. He has his Bible to be sure, but it remains closed. He broods in sullen silence over his fancied wrongs and comes out a hardened and vindictive ruffian.

Ennui cannot be considered lightly as a cause of army disease. Colonel Lindsey, speaking of the soldier's daily life, says that "Perhaps no living individual suffers more *from ennui than he*. He has no employment save his drill and his duties; these are of a most monotonous and uninteresting description, so much so that you cannot increase their amount without wearying and disgusting him. All he has to do is under restraint; he is not like a working man or an artisan; a working man digs and his mind is his own, an artisan is interested in the work on which he is engaged, but a soldier has to give you all his attention, and he has nothing to show for the work done."

The Private in the Foot Guards thus spends the day:—"He gets up at six. There is (ordinarily) no drill before breakfast; he makes up his bed and cleans his things; he gets his breakfast at seven. He turns out for drill at half-past seven or eight; his drill may last an hour and a half. If it be guard-day there is no drill except for defaulters. The men for duty are paraded at ten o'clock; that finishes his day's drill altogether. There is evening parade, which takes half an hour; and then his time is his own till tattoo, which is at nine in winter and at ten in summer. That is the day of a soldier not on guard, or not belonging to the company which is out for Minié practice."

"Here then," says Dr. Guy, "we have a graphic description of a man handed over by our military authorities for a prey to listlessness, idleness and dissipation."

The reader is now invited to examine particularly the

statistics in the Appendix, and to determine whether a Baconian rigour has been observed in the verification of facts, whether there is the necessary correlation between them, and whether the results are methodically induced; whether Miss Nightingale's plain rules as to unity have been heeded, whether in fact they are entitled to the high consideration they have received or are mere disjecta membra, numerical incoherences.

In examining the method employed by Dr. Balfour, it may assist us if we examine his vaccine reports. Not having the means of referring to the original, I give the following on the authority of Dr. Copland, (*Medical Dict.* Vol. 3.) Report for eight years, (which ought to be stated for seven) commencing April 1, 1844, to March 31, 1851.

AMONG TROOPS SERVING IN	Aggregate Strength.	Cases of Small Pox.	Deaths by Small Pox.	Annual ratio per 1,000 Strength.	
				Cases.	Deaths.
The United Kingdom...	254,597	557	56	2·188*	·220*
Temperate Colonies.....	557,112	160	29	·287	·052
Tropical Colonies.....	314,131	28	1	·089	·025
TOTAL.....	1,125,840	745	93	·662	·083

The second column indicates the aggregate strength of the army. What does aggregate mean?—a collection of particulars into a mass; well then, the aggregate of eight years means or ought to mean, the collection of the individual cases into a mass. We find the total aggregate strength for eight years, 1,125,840. Let us verify this alarming fact. Take the average strength of the army at 140,730. We shall find that in about 18 years one half of these men will have died or been invalided. Adopting the actuary's rule we assert that 18 years is the expectation of military service from the period of enlisting. In seven years, 7-18ths of the army will be changed by the addition of new recruits. This gives us $140,730 + 54,728 = 195,458$, which is the true aggregate strength of the army for seven years.

Dr. Balfour has obtained his aggregate by multiplying the mean by eight, thus causing an aberration the extent of which will be indicated by the following table.

Vaccine Report for Seven Years, April 1, 1844, to May 31, 1851.

Aggregate Strength.	Cases of Small Pox.	Deaths.	Annual Ratio per 1,000 Strength	
			Cases.	Deaths.
195,453	745	93	3·8	·407

Mr. Hume moved for the production of the joint reports of Sir A. Tulloch and Dr. Balfour, and though the War Office looked upon them with eyes of affection, no statistical department was organised, and when the Crimean War broke out, "the returns of sickness and mortality became involved in apparently inextricable confusion."

To all but the initiated, at one particular crisis these Crimean reports looked "satisfactory," to use the words of the principal medical officer, when in truth they indicated the ghastly fact, that at the current rate, in less than twelve months the whole force would be swept away. The mortality had to be multiplied by fifty-two, the number of weeks in the year. It was given as 2·25 per cent. and meant for a week.

The obsolete nosology of Cullen has been retained as the basis of returns for many years after it has been abandoned by the profession, and has thereby restricted the range of observation. This is the more remarkable as the civil mortuary returns have now for many years been based upon a nosology suggested by the advance of science. And yet, notwithstanding the scientific basis of these returns, they are not and cannot be scientifically true. In a paper which I read before this Society two years ago, I showed that four-fifths of the returns are mere guesses of ignorant registrars, incapable of scientific application and totally untrustworthy as bases of legislation. All that is valuable in them is the enumeration of deaths, and this is trustworthy.

A not unfrequent source of error is the practice in military hospitals of making the diagnosis of the patient's disease on his first admission. This is written down, and then like the

law of the Medes and Persians, cannot be altered. The only possible remedy is to discharge the patient and readmit him; but as this would involve the publication of a surgeon's blunder, of course it is not done.

Mr. Brown and Dr. Farr state that as an instance of defective reform, the term alcoholismus, by which the Registrar General means delirium tremens, is wanting, and yet the disease is very frequent.

Mr. Martin represented the necessity of the appointment of a Statistical officer independent of the Director General, to which Sir Andrew Smith strenuously objected.

Sir A. Tulloch states that it is impossible to compare the foot guards mortality with that of the London population, as the latter is constantly shifting. Miss Nightingale describes the faultiness of the army returns, and shews how calculated they are to mislead. She says,—“The standard of comparison all over the civilised world is the percentage of deaths per annum, also the percentage of admissions into hospital at the same time. Mere information as to admissions and deaths, compared with strength during one week, is simply misleading the authorities, unless indeed, which is hardly likely, they are thoroughly *au fait* at Statistical enquiries.” It appears to have deceived the principal medical officer himself. Miss Nightingale continues,—“At a time when every one in the Crimea was expecting cholera, which actually did come, and is shortly after recorded by the Inspector General himself, the commander of the forces is congratulated on the ‘steadily improving state of the health of the army.’ In January, 1855, the deaths from scorbutic disease are put down as 75, though it is well known that the larger part, if not all of the deaths, which amounted to 2,253, were due to the scorbutic form of disease. Yet this is not brought forward at all at the time, nor prominently at any subsequent time in our returns.”

General Airey declared that the army was almost without clothes. Commissioner Maxwell on the other hand stated that there was an “*enormous supply*.”

Miss Nightingale explains thus :—"The Purveyor states that he *issued* to her 2,500 shirts. Now, only 800 were delivered to her. A requisition was made for 2,500, and as *usual*, the amount of the requisition, and not the actual issue, was debited."

Three different returns are given of deaths on board the transports from Balaclava to Scutari, and the number is different in each return, nay there is scarcely a single ship in which the returns agree. Now, although due allowance must be made for necessary irregularities and pressure of business during war, it is not unreasonable to suppose that the system is worked somewhat in the same way in times of peace, and that imperfect data lead to blundering calculations. One fact we have on authority, that the household troops furnish no returns, and are not in a position to do so; and yet in the face of this statement returns are quoted, but only from the 2nd Life Guards, and acknowledged to be of no value in consequence of scantiness.

In considering the general accuracy of army returns in time of peace let us take a few facts :—In the appendix to the report we have various tables indicating the mortality of soldiers in the United Kingdom. These tables indicate the astounding fact that "the magnificent Guards, pipeclayed and polished up to meet the eye of princes," are dying at a rate $3\frac{1}{3}$ times greater than do agricultural labourers who are members of friendly societies. They are compared with this class very properly, as the Government stands in the relation of a friendly society to the soldier. The January number of the Quarterly gives this table as shewing the number dying every year as compared with the male civilians of England and Wales at army ages :—

Household Cavalry	11·0
Dragoon Guards and Dragoons.....	13·3
Foot Guards.....	20·4
Infantry of the Line	18·7

Population of England and Wales at Army ages :—

Town and Country Population	9·2
Country alone	7·7
One of the most unhealthy Towns at army ages	12·4

There are three tables from which this may be calculated: first, at page 478, a calculation for nine years; next one at page 484, for seven and a quarter years, and immediately below it one for ten years. No. 1 shows the following rates:—

	Deaths per 1,000. Troops on actual Service.	Add deaths of Pensioners. and you have
Cavalry of the Line	13·2	15·2
Foot Guards	19·2	23·1
Infantry	16·7	18·7

I extract from the second table the facts relating to the Household Cavalry and Foot Guards alone:—

	Under 18	18 to 25	25 to 33	33 to 40	40 to 50	All ages Average.	Calculated with 1st.	Calculated without 1st
Household Cavalry...	8·4	14·7	11·4	16·3	22·8	14·5	14·72	16·3
Foot Guards	6·1	22·3	22·5	17·7	27·5	21·6	19·9	22·5

A note accompanies this table, stating that no correct deductions can be drawn from the ratios under eighteen, as the numbers are so few and the results consequently irregular. I have therefore calculated without this column, and not finding the figures agree, I have taken it in. The first difficulty in these tables is the neglect of Miss Nightingale's maxim as to the unity of time. The third table is that which has been generally accepted by all critics as the correct one, and runs thus:—

Return for ten years. Mortality per 1000—

	Under 20	20 to 25	25 to 30	30 to 35	35 to 40	40 and upwards	Average of all ages.
Household Cavalry..	7·5	11·7	10·3	13·3	8·4	13·4	11·1
Foot Guards	11·1	21·6	21·1	19·5	22·4	26·2	20·4

Now this last number really is 20·316 recurrent decimal. If decimals are to be given at all they must be given exactly, but obviously, neither this table nor No. 2 indicate the true mortality. The Quarterly, in common with all others, blunders by not noticing the word "effective," in the heading of the table, at the 7th page of the report. A man is no less a soldier because he is a pensioner, and consequently not effective. The true death rate must be in truth higher than 23·1 on account of the large mortality amongst the invalids not pensioned, who

drift into the civil population with broken constitutions, and are lost sight of.

The annual invaliding without pension is very considerable, but no calculation can be made from the very imperfect tables furnished.

It is difficult to understand how in the hands of practical statisticians such grave errors should have crept in. Certain it is, tables professing to register the same facts not unfrequently disagree, that the quotients are occasionally very incorrectly given, and that there is little observance of the unities. To allude again to the aggregate numbers, they must be obtained either by taking one year as a mean, and multiplying by the number of years over which the enquiry extends, or each year must have been operated on and the number of new men imported into each regiment calculated, and this is the true way, but this cannot have been the plan adopted. The enormous numbers contradict the possibility of this process, so that we are obliged to infer that the first was the mode. Unless they can show clearly, what we know not to be the fact, that in every year, exactly the same number of troops is found in every station, there can be no truth nor even an approximation to truth in the results. By selecting arbitrarily the numbers in any one year, and operating accordingly, there is no limit to the aberration that may be produced.

Although no reliance can be placed on the special figures, it may be received as true, that since 1837 the sanitary element introduced into the army abroad, has reduced the mortality very largely; the figures given are—

		WHITE TROOPS. Mortality in the W. Indies,		BLACK TROOPS. Mortality,	
		Before 1837.	After.	Before 1837.	After.
Ratio of Deaths per 1000, mean strength...		81·5	60·	40·2	28·4
		JAMAICA. WHITE TROOPS.		JAMAICA. BLACK TROOPS.	
		Before 1837.	After.	Before 1837.	After.
Ditto	ditto	123	58·5	30	35·3
				ST. HELENA.	
				Before 1837.	After.
				25·4	10·6

It must not be supposed that what commonly is regarded as sanitary reform, namely, improvements in the lodging dress and

food of the soldier, has alone produced the improved rates of mortality; the more humane discipline of the army has materially aided in the good work. I mention this with the more confidence, because the facts relating to discipline and particularly to flogging, are probably recorded with more exactness than any other in the returns of a regiment. I have collated from the tables the following figures:—

Number of floggings during twenty years (1817-36) of soldiers serving abroad, exclusive of those in India and several other places:—

		Deaths from	Ratio per	Strength.
Before 1837	{ White Troops.. 25,431	3	47·6	..
	{ Black Troops .. 2,562	1	29·9	..

Number flogged in sixteen years, after 1837, and including India and other places:—

White Troops.. 1,289	..	7·2	..
Black Troops .. 654	..	8·2	..

I omit the ratio per strength, as it is impossible to calculate it; it certainly is some number much lower than 1000.

The soldier's you are aware, is a picked life. Before entering the army he is inspected twice, once at the out station, and if approved there he has to undergo a second ordeal at head quarters, either by the regimental medical officer, or by a staff surgeon on recruiting service. As the primary and secondary inspections are not kept distinct in the returns, no true table can be given of these. All that we can arrive at, is the number of rejections by staff surgeons at head quarters. From this source we find, that out of 1000 inspected, the rejections are as follows:—

London.	Bristol.	Coventry.	Liverpool.	Leeds.	Edinburgh.	Glasgow.	Cork.	Dublin.	Newry.
350·	307·	257·	367·	392·	394·	405·	209·	356·	230·

Total English Districts.	Total Scotch Districts.	Total Irish Districts.	General Total. Mean.
345·	401·	274·	335·

As an approximation to the truth it may be stated, that after twice sifting, out of 1000 examined—

Rejected..... 550

We will next take the mortality in the whole army. At page 521 we have a table, comparing army and civilians' deaths, giving this comparative result—

Average of 15 years. Annual Ratio of Deaths amongst Soldiers, per 1000 serving.	Average of 5 years. Annual Ratio of Deaths amongst Civilians, Soldiers' ages.
33.	9.2

The fallacy here is obvious. You have men serving in unhealthy climates compared with civilians at home, and you have an average of fifteen years compared with five, viz.—1849-53. Take the corresponding five years in the ^{military} ~~mortality~~ column, and you produce—

Soldiers' Deaths.	Civilians' Deaths.
27.4	9.2

On the other hand, the fact that the census generally understates civilians' ages, would tend to restore the numbers towards their former position, yet it renders the tables more unreliable.

I have before alluded to the consternation which the public press excited by the articles on the mortality in the Foot Guards. They were called "Whited Sepulchres," and other unsavoury names. The colonels of the battalions, and the authorities of the War Office, were held up to public odium. The Commissioners repeatedly affirmed the fact that the mortality of the Foot Guards was in excess of the Home Infantry of the Line, and that consumption is their peculiar scourge. A complete examination of the whole case will probably show that neither of these assertions are true. The *Times*, the *Quarterly Review*, and the authors of various papers on the subject, understate the actual deaths, which, correctly reduced, amount to—

Infantry of the Line18.7	} Mortality per 1000. Effective and Pensioned.
Foot Guards23.1	

The mistake has arisen from an oversight of the word "effective," which struck the Editor of the *Lancet*, and in an article in the number for February 27, 1853, he corrects it thus—

Infantry of the Line29.1	} Mortality per 1000. Effective and Pensioned.
Foot Guards28.1	

This extraordinary result is attained by finding that 20.8 per

1000 of Infantry of the Line are pensioned annually, and 15·9 of the Foot Guards; and that one-half of these (though the given number is 6-10ths) die in ten years; Infantry of the Line, 10·4; Foot Guards, 7·9. These ten years' deaths are boldly added to one year's mortality of each branch, and the above striking figures produced. How a journal, so generally trustworthy, managed to blunder in this way, would be inconceivable, if we forgot the general looseness of statistics. At page 479 will be found tables of invaliding. This includes facts relating to pensioning, and indicates that the Infantry of the Line invalid, as given in the *Lancet*, 20·8 per 1000 serving. This correctly reduced is 22·16; and that the Foot Guards' invalid 15·9 per 1000, leaving a balance of 6·26. This fact, rightly considered, will solve the whole question, and excessive mortality of Foot Guards, as compared with the Line, will prove merely a convertible term for laxity of invaliding. It is well known, as Mr. Herbert expresses it, "that the personal relations between officers and men were perhaps on a better footing in the Guards than in the Line; partaking less of the austerity of discipline, and showing more individual interest in the men." This is confirmed by enquiries amongst discharged Guards, particularly in reference to the medical officers, whose kindness is remembered with gratitude. From an unwillingness to let them die in poverty and neglect, they often allow them to end their days in their regiment; besides this, it should be considered that the battalions of the Guards are composed of expressly picked men of tall stature, smart looking fellows, difficult to get hold of, and consequently resigned with reluctance. It is a common remark in regiments of the Line, that the mortality is greater amongst the grenadier companies than in the less prized men.

Besides, in the Foot Guards, invaliding takes place only once a quarter, but a monthly Board decides the matter for the Line. The Foot Guard, consequently, has an opportunity of dying between the invaliding periods, as evidenced by a fact stated to me by Serjeant Bacon, that he has known a man mount guard and die of consumption within a month.

We will now consider more particularly how the figures would stand if the same stringency of invaliding prevailed in the Regiments of Guards and Line. 6·26 is the difference, and it is not unfair to assume that the majority of these are consumptive men, who would die within the year. Three-fourths of these would be represented by 4·695, then $23·1 - 4·69 = 18·405$ mortality of Guards; as compared with 18·7 mortality of Line at home. Further, the Home Infantry, before the Crimean war, numbered about four and half times as many men as the Guards could muster, and yet the latter exhibited one-sixth more of men above twenty-one years in active service than the former. Of these aged soldiers only one-third were discharged, whereas nearly every man in the Line of that length of service was pensioned off. This completes the history of invaliding in the two branches, the discounting, it will be seen, relates only to the period under twenty-one years service.

Could the public have been aware of the death-rate of the Foot Guards since 1853, much virtuous indignation would have been spared. The Tower Ditch has been drained, and many other sanitary reforms have been completed, and this is the result:—

	Annual Mortality.
Average Deaths of Effective Men before 1853	174
Total Deaths in..... 1856	44
Total ditto	1857
First three Months of 1859	1858
	9

I would not for a moment wish to be understood that there is not much yet to be done for the improvement of the soldier's condition, or that the frightful injustice which has hitherto been his patrimony is cancelled. But justice will be done if the public support the government in a large measure of reform, and insist upon a liberal and wise expenditure of public money to fulfil this object.

It was generally understood that during the Duke of Wellington's life time, it was useless to attempt organic reforms in the army, but it is difficult to understand why so long a period has been allowed to pass over since his death, without

any attempt to grapple with giant abuses, to find a remedy for the gathered wrongs which for long years have impaired the efficiency of the Army Surgeon, have made science a mere helpless tool in the hands of arbitrary authority, and which have lowered the moral tone, and prostrated the physical condition of the soldier. The Duke of Cambridge and General Peel seem determined to act with promptness and vigour in repressing profligate jobbing and ancient abuses, and unfettered by obsolete prejudices or military traditions, to allow justice alone to be the governing principle of the army.

I may confidently add that, under the directorship of Mr. Alexander, and of the Inspector General of Hospitals, Dr. Logan, aided by so valuable an officer as the Purveyor in Chief, Mr. Scott Robinson^{Esq}, the medical officer will find support in a zealous and conscientious discharge of his duties.

We may now hope that science will work hand in hand with military authority, and that if providence should ever raise up another Florence Nightingale in aid of a suffering army, she may never again have to administer a rebuke to inefficiency and neglect.

APPENDIX.

DRUNKENNESS IN THE ARMY.—In the year 1830, the issue of spirit rations to troops serving abroad was discontinued, and a marked diminution of drunkenness was the result. Captain T. Hart Davies giving evidence before the Parliamentary Commission on Drunkenness, stated that during twenty years service he never knew an instance of a soldier being tried by Court Martial, whose crime was not due to drunkenness; and he added that when he was stationed at Halifax, in Nova Scotia, he was satisfied that if the men had been suddenly called out immediately after tattoo, one half of them would, through drunkenness, have been found incapable of military duty.

FOOT GUARDS.—Sergeant Bacon, for nine years Hospital Sergeant at Portman Barracks, informed me that notwithstanding the limited sleeping accommodation, he considered the quarters very healthy. For many months they had only eight or nine men in hospital at one time out of the whole battalion, between six and seven hundred strong.

In answer to my question, to what cause he attributed the occasional excessive mortality of the Foot Guards, he stated: "First and foremost, the excessively heavy night work, particularly in the Tower, and exposure to wet, insufficient clothing and the use of the cross-belts, (now discontinued) pipe-clay, the dust of which disturbed the breathing, and the malaria, brought to the Tower from the Woolwich marshes during the prevalence of an east wind. On one day, ten or twelve men on the Tower guard were admitted into hospital with a bad form of sore throat and fever." He finished his list with "monotonous life, and unchanged air." I asked him if he could explain why the number of men in hospital was so small in comparison with the

mortality. Answer: "A guardsman has a pride in not complaining lightly, and besides, the punishment for malingering is very heavy;—whilst I was Hospital Sergeant, nine years, not one man was told 'leave the hospital, you have nothing the matter with you.' " Before his time, he found on reference to the books, that one man had been tried by Court Martial for malingering, and imprisoned for four months.

REPORTS OF THE REGISTRAR GENERAL.

Until it is generally known that the classification of diseases in the Registrar General's Reports is absolutely worthless, that the elaborate tables, believed in and quoted in support of arguments by men of science over the whole civilized world,—forming the materials of cram for members of parliament who devote themselves to Sanitary Reform,—are about as trustworthy as historical documents as the details of Moll Flander's income and expenditure, or Robinson Crusoe's adventures, constant and increasing injury must accrue to our national interests. The deservedly high character and known accomplishments of the Registrar General give currency to these numerical romances, minted in the brains of imaginative but unscientific subordinates. Mr. Rumsey, of Cheltenham, whose contributions to Sanitary literature have given him a high position amongst medical reformers, makes the following statements in a paper published in February, 1859.—

SUGGESTIONS.

I. In the event of the death or resignation or removal of any (extra-metropolitan) Superintendent-Registrar, the duties of his office to be divided between two officers, as follows:—

Those duties which relate to notices, licenses, performance and registration of *marriages* to be still committed to the Clerk of the Union or other person appointed by the Board of Guardians:—

The superintendence of registration of births and deaths to be committed to a Sanitary Officer.*

II. The Registers of births and deaths, with the certificates of causes of deaths, to be examined and revised by this Sanitary Superintendent; who should also be empowered to collect returns of all cases of sickness and accidents attended by the Union and Workhouse Medical Officers, as well as of cases relieved by any Hospitals, Dispensaries, Societies, and other public institutions, within his district; the persons making such returns being paid for the same at the rate of per case. The reported causes of sickness, infirmity and mortality to be carefully inquired into by the Sanitary Superintendent, especially those connected with locality, soil, density of population, dwellings, water-supply, food, occupations, habits, &c.

III. These corrected returns of Births, Deaths, and Diseases, together with meteorological observations, and notes of local events and circumstances affecting the public health, to be reported quarterly (or oftener if necessary) to the Government; and to be published annually by the Sanitary Superintendent of each district or group of districts, in a *Local Report*, which should shew a comparison of the local sickness and death-rate with averages taken from the kingdom, from the county, and from districts under similar circumstances. These Reports to be circulated among all members of Local Boards, Magistrates, and other official persons, and to be offered to the public at a low price.

* The following among other alterations would be required in the Acts for Registration and Marriage—1836-37.

Reg. Act, sec. 7. Repeal provision that the Clerk of Guardians shall have the option of accepting office of Superintendent Register of *Births and Deaths*.

Mar. Act, sec. 3. Repeal provision that the Superintendent Registrar of *Births and Deaths* shall be Superintendent Registrar of *Marriages*.

All provisions in the Marriage Act relating to notices, licenses, performance and registration of marriages by Superintendent Registrar, to apply only to the Superintendent Registrar of Marriages.

Registers of Births and Deaths to be kept separately from those of Marriages, and under the custody of the proposed Sanitary Superintendent.

IV.—The proposed Sanitary Superintendents of Registration—as statistical reporters for national purposes, independent of local and political influences—to be paid out of the Consolidated Fund; and their appointment, if made by Local Boards, to be subject to such regulations and conditions as might be required for the safety of large classes unrepresented by these Boards, and to such tests of qualification, by examination or otherwise, as Parliament or the Privy Council might determine.

Two or three of the smaller Registration districts might be combined under the same Superintendent.

SUGGESTIONS FOR AN IMPROVED NATIONAL REGISTRATION OF THE VITAL AND SANITARY STATISTICS OF THE CIVIL POPULATION OF ENGLAND.

THE more important defects in existing arrangements may be thus briefly described:—

1.—The want of accurate verification of reported facts,—*e.g.* *the causes of deaths* returned to the Registrar-General:—

2.—The want of correct and accessible information respecting the *diseases*—their causes, consequences, and periodical prevalence—recorded by the medical officers of unions and other public institutions:—

3.—The want of an organized system for the *local compilation and publication* of such facts in every district:—

4.—The entire neglect of many observations—social and scientific—which are absolutely essential to safe conclusions in matters of public health, and which can only be efficiently reported under a national system of registration.*

There are, moreover, some specific anomalies and errors in the present system, that serve to indicate the direction in which a reform of our Vital and Sanitary Statistics should proceed.

* These questions are discussed at some length in the 3rd of the “Essays on State Medicine,” and more summarily in the author’s papers laid before the British Association, 1856. See App. B. and C. to his pamphlet, “Sanitary Legislation, &c.”

(a.) Among the 624 Superintendent-Registrars in England and Wales, there are probably not ten† who are known as “scientific” men, or who superintend the registration with a view to the advancement of sanitary science.

(b.) The combination of the office of Superintendent Registrar of Births and Deaths with that of Superintendent Registrar of Marriages, has given a wrong character to the former office, and led to a mistaken estimate of its objects. For the duty of regulating the performance and registration of marriages—the better known function of the united offices—naturally belongs to the Legal Profession; and lawyers, as clerks of unions, generally hold the appointment. But the supervision of records of mortality and reproduction no less naturally belongs to the Medical Profession, and in scientific hands might conduce materially to the promotion of public health.

(c.) There is no legal or authorized connexion between the registration of deaths and the medical care of the sick poor in unions and hospitals, &c. Superintendent Registrars have no control over the medical certification of deaths, nor are they fitted professionally to exercise such control, great as is the necessity for it.

(d.) There are literally *no* published records of the sickness attended at the cost of the community. The sanitary state of the people is therefore inferred solely from the number of deaths,—that is, from one only of the results of sickness,—no public account being taken of the number and duration of the attacks, which diminish the effective life-time of the population, and which cannot be correctly estimated from the rate of mortality.

Such are some of the more striking deficiencies in the Sanitary Statistics of this country. It would be easy to shew

† Only four were “medical” in 1853. Mr. May, of Macclesfield, a Superintendent Registrar, in an able paper read at the Birmingham Meeting of the National Association, shewed how beneficially his important office might be directed to the promotion of sanitary measures.

how these deficiencies affect, and are affected, by certain acknowledged errors—both in the public medical provision for the sick poor, and also in our system of forensic inquiry into the causes of suspicious deaths and public calamities. But these questions are too wide and too important for discussion in this paper. For the present, we are content to urge—that the true and safe course of the sanitary reformer lies in the path of sanitary inquiry,—a path on which we have only just entered, and in which our steps are still hesitating and uncertain. It is therefore suggested that the Legislature should without delay engraft upon the existing local arrangements for Registration an improved machinery for the collection of Vital and Medico-sanitary Statistics.